



THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Appellant:

Janne MUHONEN

Appeal No.:

Serial Number: 10/522,951

Group Art Unit: 2617

Filed: March 7, 2005

Examiner: Shannon Brooks

For: LOCATION SERVICES FOR MOBILE COMMUNICATION SERVICES

BRIEF ON APPEAL

May 1, 2008

This is an appeal from the final rejection set forth in an Official Action dated March 30, 2007, finally rejecting claims 29-67, all of the claims pending in this application, as being unpatentable over Hanson (U.S. 6,023,624) in view of Kallin et al. (U.S. 6,058,308) ("Kallin"). A Request for Reconsideration, together with a Petition for Extension of Time, was timely filed on July 23, 2007. A Notice of Appeal with Petition for Extension of Time was filed on October 1, 2007. An Advisory Action was issued on October 16, 2007, maintaining the final rejections. This Appeal Brief is being timely filed.

I. REAL PARTY IN INTEREST

The real parties in interest in this application are Nokia Corporation of Espoo, Finland.

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II. STATEMENT OF RELATED APPEALS AND INTERFERENCES

There are no known related appeals and/or interferences which will directly effect or be directly effected by or have a bearing on the Board's decision in this appeal.

### III. STATUS OF CLAIMS

Claims 29-67, all of the claims pending in the present application, stand rejected and are the subject of this appeal. Claims 1-28 were previously canceled.

### IV. STATUS OF AMENDMENTS

An amendment to dependent claim 55 was submitted on July 23, 2007 in response to the final Office Action. The Advisory Action dated October 16, 2007 did not indicate whether the amendment to claim 55 was entered or whether it would be entered upon appeal. In a telephone conversation with the Examiner on April 30, 2008, the Examiner indicated that the amendment to claim 55 would be entered upon appeal and indicated that an updated Advisory Action would be issued. To date, Applicants have not yet received the updated Advisory Action. However, in accordance with the Examiner's statement that the amendment to claim 55 would be entered upon appeal, Appellants are proceeding with the appeal under the assumption that the amendment to claim 55 is entered.

### V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 29, upon which claims 30-40 are dependent, recites a method including receiving a request for a current location of a mobile station in a mobile communication system (Specification, page 2, lines 9-11, page 5, lines 27-30, page 8, lines 16-17, page

9, lines 28-30, Fig. 2, step 30, Fig. 3, element 74, Fig. 5, step 130), determining a time at which a last known location of the mobile station was determined (Specification, page 2, lines 11-12, page 6, lines 13-16, page 8, lines 22-25, page 10, lines 10-14, Fig. 2, step 40, Fig. 5, step 142), comparing the time to a threshold time limit (Specification, page 2, line 12, page 6, lines 16-17, page 8, line 26 – page 9, line 2, page 10, lines 16-17, Fig. 2, step 42, Fig. 5, step 144) and, in response to the comparing, providing, as the current location, the last known location if the time is within the threshold time limit (Specification, page 2, lines 12-13, page 6, lines 28-30, page 9, lines 5-7, page 10, lines 17-19, Fig. 2, steps 44, 50, Fig. 5, step 150).

Claim 41 recites a method including receiving at a network element a request from an application for a current location of a mobile station in a mobile communication system (Specification, page 2, line 30 – page 3, line 1, page 5, lines 27-30, page 8, lines 16-17, page 9, lines 28-30, Fig. 2, step 30, Fig. 3, element 74, Fig. 5, step 130), determining, at the network element, a time at which a last known location of the mobile station was determined (Specification, page 3, lines 2-3, page 6, lines 13-16, page 8, lines 22-25, page 10, lines 10-14, Fig. 2, step 40, Fig. 5, step 142), comparing, at the network element, the time to a threshold time limit (Specification, page 3, line 3, page 6, lines 16-17, page 8, line 26 – page 9, line 2, page 10, lines 16-17, Fig. 2, step 42, Fig. 5, step 144), and, in response to the comparing, providing to the application, as the current location, the last known location if the time is within the threshold time limit (Specification, page 3, lines 4-5, page 6, lines 28-30, page 9, lines 5-7, page 10, lines 17-19, Fig. 2, steps 44, 50, Fig. 5, step 150).

Claim 42, upon which claims 43-52 are dependent, recites a network element

including means for receiving a request for a current location of a mobile station in a mobile communication system (Specification, page 3, lines 6-8, page 5, lines 27-30, page 8, lines 16-17, page 9, lines 28-30, Fig. 1, element 8, Fig. 3, element 74), means for determining a time at which a last known location of the mobile station was determined (Specification, page 3, lines 8-9, page 6, lines 13-16, page 8, lines 22-25, page 10, lines 10-14, Fig. 10, elements 10 and 12, Fig. 3, elements 68, 82 and 84), means for comparing the time to a threshold time limit (Specification, page 3, lines 9-10, page 6, lines 16-17, page 8, line 26 – page 9, line 2, page 10, lines 16-17, Fig. 3, element 84), and means for providing, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit (Specification, page 3, lines 10-11, page 6, lines 28-30, page 9, lines 5-7, page 10, lines 17-19, Fig. 1, elements 12, 220 and 8, Fig. 3, elements 72, 66 and 62).

Claim 53, upon which claims 54-56 are dependent, recites a mobile communication system including an application configured to provide location dependent services and to generate a location request for a user equipment (Specification, page 3, lines 28-30, page 5, lines 27-28, page 8, lines 16-17, page 9, lines 17-19, Fig. 1, element 4, Fig. 3, element 74, Fig. 4, element 100), a network element configured to receive the request for a current location of a mobile station (Specification, page 3, lines 30-31, page 5, lines 27-30, page 8, lines 16-17, Fig. 1, element 8, Fig. 3, elements 72 and 74), a network element configured to determine a time at which a last known location of the mobile station was determined and to compare the time to a threshold time limit (Specification, page 3, line 31 – page 4, line 1, page 6, lines 13-17, page 8, line 22 – page 9, line 2, Fig. 1, elements 10 and 12, Fig. 3, elements 68, 82 and 84), and a network

element configured to provide, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit (Specification, page 4, lines 1-2, page 6, lines 28-30, page 9, lines 5-7, Fig. 1, elements 12, 220 and 8, Fig. 2, element 44, Fig. 3, elements 72, 66 and 62).

Claim 57, upon which claims 58-67 are dependent, recites a network element including a receiving unit configured to receive a request for a current location of a mobile station in a mobile communication system (Specification, page 3, lines 30-31, page 5, lines 27-30, page 8, lines 16-17, page 9, lines 28-30, Fig. 1, element 8, Fig. 3, element 74), a determining unit configured to determine a time at which a last known location of the mobile station was determined (Specification, page 3, line 31, page 6, lines 13-16, page 8, lines 22-25, page 10, lines 10-14, Fig. 10, elements 10 and 12, Fig. 3, elements 68, 82 and 84), a comparing unit configured to compare the time to a threshold time limit (Specification, page 3, line 31 – page 4, line 1, page 6, lines 16-17, page 8, line 26 – page 9, line 2, page 10, lines 16-17, Fig. 3, element 84), and a providing unit configured to provide, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit (Specification, page 4, lines 1-2, page 6, lines 28-30, page 9, lines 5-7, page 10, lines 17-19, Fig. 1, elements 12, 220 and 8, Fig. 3, elements 72, 66 and 62).

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of rejection to be reviewed on appeal are the rejection of claims 29-67 under 35 U.S.C. §103(a) as being unpatentable over Hanson (U.S. Patent No. 6,023,624) in view of Kallin (U.S. Patent No. 6,058,308).

## VII. APPELLANT'S ARGUMENTS

Appellants respectfully submit that each of pending claims 29-67 recites subject matter that is not taught, disclosed, or suggested by the cited art. Each of the claims is being argued separately, and thus, each of the claims stands or falls alone.

### A. Claims 29-67 are not obvious in view of Hanson and Kallin

In the final Office Action, claims 29-67 were rejected under 35 U.S.C. §103(a) as being unpatentable over Hanson (U.S. Patent No. 6,023,624) in view of Kallin (U.S. Patent No. 6,058,308). The Office Action took the position that Hanson discloses all of the elements of the claims, with the exception of providing, as the current location, the last known location if the time is within the threshold limit. The Office Action then cited Kallin as allegedly curing this deficiency in Hanson.

Appellants submit that each of claims 29-67 recite subject matter that is not taught or disclosed by the combination of Hanson and Kallin, and as such, the Board's reversal of the rejection is respectfully requested.

#### 1) Claim 29

Claim 29 recites a method including receiving a request for a current location of a mobile station in a mobile communication system, determining a time at which a last known location of the mobile station was determined, comparing the time to a threshold time limit and, in response to the comparing, providing, as the current location, the last known location if the time is within the threshold time limit.

Appellants respectfully submit that claim 29 recites subject matter which is neither disclosed nor suggested by the combination of Hanson and Kallin.

Hanson discloses a system for paging mobile telephone units (MTU) in a cellular mobile system that conserves paging resources. If the identity of the most recent cell in which the MTU was located matches the identity of the cell wherein the MTU was located on the previous registration, then an initial page covering only the cell of the most recent call location for the target MTU, and the neighboring cells for that cell, is used.

Kallin discloses a method for adaptively selecting a paging area throughout which a mobile terminal is paged. A record is maintained which indicates the position where the mobile terminal was located when last accessing the network. When a page is to broadcast to the mobile terminal, the record is accessed and the page is broadcast to selected parts of the network based on the record.

As reiterated by the Supreme Court in *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, 82 USPQ2d 1385 (2007), the framework for the objective analysis for determining obviousness under 35 U.S.C. § 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries. The factual inquiries are: (a) determining the scope and content of the prior art; (b) ascertaining the differences between the claimed invention and the prior art; and (c) resolving the level of ordinary skill in the pertinent art. (see *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, 82 USPQ2d 1385 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966); see also MPEP 2141).

In *KSR*, the Supreme Court particularly emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art” *Id.* However, as will be discussed below, Appellants submit that the prior art does not disclose, teach or suggest all of the elements of the claimed invention. Accordingly,

Appellants respectfully assert that the final Office Action failed to establish a prima facie case for obviousness.

Appellants respectfully submit that the combination of Hanson and Kallin fails to disclose or suggest all of the elements of claim 29 and that, therefore, the final rejection was improper and should be withdrawn. In particular, Appellants submit that the combination of Hanson and Kallin does not disclose or suggest “comparing the time to a threshold time limit; and in response to the comparing, providing, as the current location, the last known location if the time is within the threshold time limit,” as recited in claim 29.

Hanson is only directed to determining the size of a paging area. According to Hanson, if the current time minus the most recent registration time is greater than a fourth threshold time value, then flood paging of all MSCs is carried out. If the current time minus the most recent registration time is greater than the third threshold time value then the page is directed to the MSC. If the current time minus the most recent registration time is greater than the second threshold time value, then either the sub-MSC registration zone is paged or the page is directed to the MSC. Finally, if the current time minus the most recent registration time is greater than the first threshold time value then only the new registration cell and its neighbor are paged (Hanson, Figure 5).

Therefore, Hanson is concerned with determining an area that should be paged. According to Hanson, if a paging is unsuccessful, then paging over a larger area is carried out. Consequently, the different thresholds of Hanson are used simply to define the size of an area over which a page is to be sent. Hanson fails to disclose or suggest that the last known location is provided as the current location if the time is within the threshold time limit. Kallin fails to cure these deficiencies in Hanson. As such, the



combination of Hanson and Kallin fails to disclose or suggest all of the elements of the present claims.

Furthermore, Appellants respectfully submit that it would not have been obvious to a person of skill in the art to combine Hanson with Kallin to yield the claimed invention. Kallin, as discussed above, teaches that information indicative of the position at which the mobile terminal was located when it last accessed a base station of the network infrastructure of the communication system is maintained in a record (Kallin, Column 4, lines 13-16). In addition, Figure 11 of Kallin illustrates the steps for paging a mobile terminal. It is clear when reading the teachings of Kallin as a whole, that Kallin does not “provide” a current location of a mobile station as in the claimed invention. Rather, Kallin merely maintains a record of information indicative of the position when the mobile station last accessed a base station. Kallin is silent regarding the provision of location information.

Thus, the disclosure of Kallin with respect to location information is analogous to that of Hanson as shown in step 503 of Figure 5 (i.e. to find the identification of the cell in which the MTU was most recently found) (Kallin, Column 3, lines 65-67). Indeed, Kallin seeks to achieve a similar solution to that of Hanson (see Kallin, Column 7, lines 55-57). Kallin uses information regarding the last accessed cell by the mobile terminal and if no response is received to the page, then the paging area is increased.

Therefore, Appellants submit that a person of skill in the art would only be motivated to apply the teachings of Kallin regarding maintaining a record of the last accessed cell to the analogous portions of Hanson (i.e. block 503 of Figure 5). As mentioned above, Kallin merely teaches maintaining a record of the cell in which the

mobile terminal was located when last accessing a base station. Kallin neither teaches nor suggests providing any more information regarding the mobile terminal than does Hanson.

In any case, Appellants respectfully submit that the record of location information in Kallin is only used at the start of the paging process (Kallin, Figure 11, block 232) before any steps of comparing (Figure 11, block 234) are used to determine whether the size of the paging area should be expanded.

Therefore, any combination of Kallin and Hanson would not result in the features of the claimed invention. Hanson teaches that the step of consulting the subscriber database record 502 occurs before the steps of paging 521, 517 and comparing the time to a threshold time 532, 533, 535, 537. As a result, the combination of Kallin and Hanson would not result in current location information being provided because both references disclose using information regarding the last access cell before any steps of comparing.

Thus, the combination of Kallin and Hanson does not disclose or suggest that current location of the mobile station can be provided in response to comparing a time to a threshold time.

Further, Appellants respectfully submit that a person of skill in the art would not have been motivated to modify the teachings of Kallin such that the information regarding the last accessed cell is provided as a result of a comparing step (Kallin, Figure 11, block 234) in the paging process because this information is not required for the paging method. Additionally, there is no reason to provide location information in response to any of the threshold tests (531, 533, 535, 537) in Hanson either, for similar reasons.

Therefore, even if Kallin were considered to provide a current location of a mobile

station, which is not admitted, a combination of Kallin and Hanson would not result in the claimed invention because the current location of a mobile station would not be provided in response to a step of comparing the time to a threshold time limit.

In contrast, according to embodiments of the claimed invention, a request for a current location of the MSC is received at the MSC 10. It is then determined a time at which the last known location was determined using data stored in the VLR 12. This time is compared to a threshold time limit in the MSC and, as a result of this comparison, if the time is within the threshold time limit, the last known location is provided as the current location. Examples of the present invention, therefore, provide the last known location of a mobile station as the current location depending on the “freshness” of the location information (see Specification, page 6, lines 22-27). As a result, the radio resources are optimized while the mobile station is in an idle mode unless location requests are issued to the mobile stations. Hanson and Kallin fail to disclose or suggest all of the elements of the claimed invention and, therefore, fail to provide such advantages.

Thus, for at least the reasons discussed above, the combination of Hanson and Kallin does not disclose or suggest “comparing the time to a threshold time limit; and in response to the comparing, providing, as the current location, the last known location if the time is within the threshold time limit,” as recited in claim 29. As such, Appellants respectfully submit that the final rejection was clearly erroneous and should be reversed.

## 2) Claim 30

Claim 30 is dependent upon claim 29, and recites additional limitations. Thus, claim 30 is patentable at least for the reasons claim 29 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this

rejection be reversed and this claim allowed.

3) Claim 31

Claim 31 is dependent upon claim 29, and recites additional limitations. Thus, claim 31 is patentable at least for the reasons claim 29 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

4) Claim 32

Claim 32 is dependent upon claim 29, and recites additional limitations. Thus, claim 32 is patentable at least for the reasons claim 29 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

5) Claim 33

Claim 33 is dependent upon claim 29, and recites additional limitations. Thus, claim 33 is patentable at least for the reasons claim 29 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

6) Claim 34

Claim 34 is dependent upon claim 29, and recites additional limitations. Thus, claim 34 is patentable at least for the reasons claim 29 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

7) Claim 35

Claim 35 is dependent upon claim 29, and recites additional limitations. Thus,

claim 35 is patentable at least for the reasons claim 29 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

8) Claim 36

Claim 36 is dependent upon claim 29, and recites additional limitations. Thus, claim 36 is patentable at least for the reasons claim 29 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

9) Claim 37

Claim 37 is dependent upon claim 29, and recites additional limitations. Thus, claim 37 is patentable at least for the reasons claim 29 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

10) Claim 38

Claim 38 is dependent upon claim 29, and recites additional limitations. Thus, claim 38 is patentable at least for the reasons claim 29 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

11) Claim 39

Claim 39 is dependent upon claim 29, and recites additional limitations. Thus, claim 39 is patentable at least for the reasons claim 29 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

### 12) Claim 40

Claim 40 is dependent upon claim 29, and recites additional limitations. Thus, claim 40 is patentable at least for the reasons claim 29 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

### 13) Claim 41

Claim 41 recites a method including receiving at a network element a request from an application for a current location of a mobile station in a mobile communication system, determining, at the network element, a time at which a last known location of the mobile station was determined, comparing, at the network element, the time to a threshold time limit, and, in response to the comparing, providing to the application, as the current location, the last known location if the time is within the threshold time limit.

Appellants respectfully submit that claim 41 recites subject matter which is neither disclosed nor suggested by the combination of Hanson and Kallin.

Hanson discloses a system for paging mobile telephone units (MTU) in a cellular mobile system that conserves paging resources. If the identity of the most recent cell in which the MTU was located matches the identity of the cell wherein the MTU was located on the previous registration, then an initial page covering only the cell of the most recent call location for the target MTU, and the neighboring cells for that cell, is used.

Kallin discloses a method for adaptively selecting a paging area throughout which a mobile terminal is paged. A record is maintained which indicates the position where the mobile terminal was located when last accessing the network. When a page is to broadcast to the mobile terminal, the record is accessed and the page is broadcast to

selected parts of the network based on the record.

As outlined above, the framework for the objective analysis for determining obviousness under 35 U.S.C. § 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries. The factual inquiries are: (a) determining the scope and content of the prior art; (b) ascertaining the differences between the claimed invention and the prior art; and (c) resolving the level of ordinary skill in the pertinent art. (see *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, 82 USPQ2d 1385 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966); see also MPEP 2141).

In *KSR*, the Supreme Court particularly emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art” *Id.* However, as will be discussed below, Appellants submit that the prior art does not disclose, teach or suggest all of the elements of the claimed invention. Accordingly, Appellants respectfully assert that the final Office Action failed to establish a *prima facie* case for obviousness.

Appellants respectfully submit that the combination of Hanson and Kallin fails to disclose or suggest all of the elements of claim 41 and that, therefore, the final rejection was improper and should be withdrawn. In particular, Appellants submit that the combination of Hanson and Kallin does not disclose or suggest “comparing, at the network element, the time to a threshold time limit; and in response to the comparing, providing to the application, as the current location, the last known location if the time is within the threshold time limit,” as recited in claim 41.

Hanson is only directed to determining the size of a paging area. According to

Hanson, if the current time minus the most recent registration time is greater than a fourth threshold time value, then flood paging of all MSCs is carried out. If the current time minus the most recent registration time is greater than the third threshold time value then the page is directed to the MSC. If the current time minus the most recent registration time is greater than the second threshold time value, then either the sub-MSC registration zone is paged or the page is directed to the MSC. Finally, if the current time minus the most recent registration time is greater than the first threshold time value then only the new registration cell and its neighbor are paged (Hanson, Figure 5).

Therefore, Hanson is concerned with determining an area that should be paged. According to Hanson, if a paging is unsuccessful, then paging over a larger area is carried out. Consequently, the different thresholds of Hanson are used simply to define the size of an area over which a page is to be sent. Hanson fails to disclose or suggest that the last known location is provided as the current location if the time is within the threshold time limit. Kallin fails to cure these deficiencies in Hanson. As such, the combination of Hanson and Kallin fails to disclose or suggest all of the elements of the present claims.

Furthermore, Appellants respectfully submit that it would not have been obvious to a person of skill in the art to combine Hanson with Kallin to yield the claimed invention. Kallin, as discussed above, teaches that information indicative of the position at which the mobile terminal was located when it last accessed a base station of the network infrastructure of the communication system is maintained in a record (Kallin, Column 4, lines 13-16). In addition, Figure 11 of Kallin illustrates the steps for paging a mobile terminal. It is clear when reading the teachings of Kallin as a whole, that Kallin does not



“provide” a current location of a mobile station as in the claimed invention. Rather, Kallin merely maintains a record of information indicative of the position when the mobile station last accessed a base station. Kallin is silent regarding the provision of location information.

Thus, the disclosure of Kallin with respect to location information is analogous to that of Hanson as shown in step 503 of Figure 5 (i.e. to find the identification of the cell in which the MTU was most recently found) (Kallin, Column 3, lines 65-67). Indeed, Kallin seeks to achieve a similar solution to that of Hanson (see Kallin, Column 7, lines 55-57). Kallin uses information regarding the last accessed cell by the mobile terminal and if no response is received to the page, then the paging area is increased.

Therefore, Appellants submit that a person of skill in the art would only be motivated to apply the teachings of Kallin regarding maintaining a record of the last accessed cell to the analogous portions of Hanson (i.e. block 503 of Figure 5). As mentioned above, Kallin merely teaches maintaining a record of the cell in which the mobile terminal was located when last accessing a base station. Kallin neither teaches nor suggests providing any more information regarding the mobile terminal than does Hanson.

In any case, Appellants respectfully submit that the record of location information in Kallin is only used at the start of the paging process (Kallin, Figure 11, block 232) before any steps of comparing (Figure 11, block 234) are used to determine whether the size of the paging area should be expanded.

Therefore, any combination of Kallin and Hanson would not result in the features of the claimed invention. Hanson teaches that the step of consulting the subscriber

database record 502 occurs before the steps of paging 521, 517 and comparing the time to a threshold time 532, 533, 535, 537. As a result, the combination of Kallin and Hanson would not result in current location information being provided because both references disclose using information regarding the last access cell before any steps of comparing.

Thus, the combination of Kallin and Hanson does not disclose or suggest that current location of the mobile station can be provided in response to comparing a time to a threshold time.

Further, Appellants respectfully submit that a person of skill in the art would not have been motivated to modify the teachings of Kallin such that the information regarding the last accessed cell is provided as a result of a comparing step (Kallin, Figure 11, block 234) in the paging process because this information is not required for the paging method. Additionally, there is no reason to provide location information in response to any of the threshold tests (531, 533, 535, 537) in Hanson either, for similar reasons.

Therefore, even if Kallin were considered to provide a current location of a mobile station, which is not admitted, a combination of Kallin and Hanson would not result in the claimed invention because the current location of a mobile station would not be provided in response to a step of comparing the time to a threshold time limit.

In contrast, according to embodiments of the claimed invention, a request for a current location of the MSC is received at the MSC 10. It is then determined a time at which the last known location was determined using data stored in the VLR 12. This time is compared to a threshold time limit in the MSC and, as a result of this comparison, if the time is within the threshold time limit, the last known location is provided as the current location. Examples of the present invention, therefore, provide the last known location of

a mobile station as the current location depending on the “freshness” of the location information (see Specification, page 6, lines 22-27). As a result, the radio resources are optimized while the mobile station is in an idle mode unless location requests are issued to the mobile stations. Hanson and Kallin fail to disclose or suggest all of the elements of the claimed invention and, therefore, fail to provide such advantages.

Thus, for at least the reasons discussed above, the combination of Hanson and Kallin does not disclose or suggest “comparing, at the network element, the time to a threshold time limit; and in response to the comparing, providing to the application, as the current location, the last known location if the time is within the threshold time limit,” as recited in claim 41. As such, Appellants respectfully submit that the final rejection was clearly erroneous and should be reversed.

#### 14) Claim 42

Claim 42, upon which claims 43-52 are dependent, recites a network element including means for receiving a request for a current location of a mobile station in a mobile communication system, means for determining a time at which a last known location of the mobile station was determined, means for comparing the time to a threshold time limit, and means for providing, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit.

Appellants respectfully submit that claim 42 recites subject matter which is neither disclosed nor suggested by the combination of Hanson and Kallin.

Hanson discloses a system for paging mobile telephone units (MTU) in a cellular mobile system that conserves paging resources. If the identity of the most recent cell in which the MTU was located matches the identity of the cell wherein the MTU was located

on the previous registration, then an initial page covering only the cell of the most recent call location for the target MTU, and the neighboring cells for that cell, is used.

Kallin discloses a method for adaptively selecting a paging area throughout which a mobile terminal is paged. A record is maintained which indicates the position where the mobile terminal was located when last accessing the network. When a page is to broadcast to the mobile terminal, the record is accessed and the page is broadcast to selected parts of the network based on the record.

As outlined above, the framework for the objective analysis for determining obviousness under 35 U.S.C. § 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries. The factual inquiries are: (a) determining the scope and content of the prior art; (b) ascertaining the differences between the claimed invention and the prior art; and (c) resolving the level of ordinary skill in the pertinent art. (see *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, 82 USPQ2d 1385 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966); see also MPEP 2141).

In *KSR*, the Supreme Court particularly emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art” *Id.* However, as will be discussed below, Appellants submit that the prior art does not disclose, teach or suggest all of the elements of the claimed invention. Accordingly, Appellants respectfully assert that the final Office Action failed to establish a *prima facie* case for obviousness.

Appellants respectfully submit that the combination of Hanson and Kallin fails to disclose or suggest all of the elements of claim 42 and that, therefore, the final rejection

was improper and should be withdrawn. In particular, Appellants submit that the combination of Hanson and Kallin does not disclose or suggest “means for comparing the time to a threshold time limit; and means for providing, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit,” as recited in claim 42.

Hanson is only directed to determining the size of a paging area. According to Hanson, if the current time minus the most recent registration time is greater than a fourth threshold time value, then flood paging of all MSCs is carried out. If the current time minus the most recent registration time is greater than the third threshold time value then the page is directed to the MSC. If the current time minus the most recent registration time is greater than the second threshold time value, then either the sub-MSC registration zone is paged or the page is directed to the MSC. Finally, if the current time minus the most recent registration time is greater than the first threshold time value then only the new registration cell and its neighbor are paged (Hanson, Figure 5).

Therefore, Hanson is concerned with determining an area that should be paged. According to Hanson, if a paging is unsuccessful, then paging over a larger area is carried out. Consequently, the different thresholds of Hanson are used simply to define the size of an area over which a page is to be sent. Hanson fails to disclose or suggest that the last known location is provided as the current location if the time is within the threshold time limit. Kallin fails to cure these deficiencies in Hanson. As such, the combination of Hanson and Kallin fails to disclose or suggest all of the elements of the present claims.

Furthermore, Appellants respectfully submit that it would not have been obvious to

a person of skill in the art to combine Hanson with Kallin to yield the claimed invention. Kallin, as discussed above, teaches that information indicative of the position at which the mobile terminal was located when it last accessed a base station of the network infrastructure of the communication system is maintained in a record (Kallin, Column 4, lines 13-16). In addition, Figure 11 of Kallin illustrates the steps for paging a mobile terminal. It is clear when reading the teachings of Kallin as a whole, that Kallin does not “provide” a current location of a mobile station as in the claimed invention. Rather, Kallin merely maintains a record of information indicative of the position when the mobile station last accessed a base station. Kallin is silent regarding the provision of location information.

Thus, the disclosure of Kallin with respect to location information is analogous to that of Hanson as shown in step 503 of Figure 5 (i.e. to find the identification of the cell in which the MTU was most recently found) (Kallin, Column 3, lines 65-67). Indeed, Kallin seeks to achieve a similar solution to that of Hanson (see Kallin, Column 7, lines 55-57). Kallin uses information regarding the last accessed cell by the mobile terminal and if no response is received to the page, then the paging area is increased.

Therefore, Appellants submit that a person of skill in the art would only be motivated to apply the teachings of Kallin regarding maintaining a record of the last accessed cell to the analogous portions of Hanson (i.e. block 503 of Figure 5). As mentioned above, Kallin merely teaches maintaining a record of the cell in which the mobile terminal was located when last accessing a base station. Kallin neither teaches nor suggests providing any more information regarding the mobile terminal than does Hanson.

In any case, Appellants respectfully submit that the record of location information in Kallin is only used at the start of the paging process (Kallin, Figure 11, block 232) before any steps of comparing (Figure 11, block 234) are used to determine whether the size of the paging area should be expanded.

Therefore, any combination of Kallin and Hanson would not result in the features of the claimed invention. Hanson teaches that the step of consulting the subscriber database record 502 occurs before the steps of paging 521, 517 and comparing the time to a threshold time 532, 533, 535, 537. As a result, the combination of Kallin and Hanson would not result in current location information being provided because both references disclose using information regarding the last access cell before any steps of comparing.

Thus, the combination of Kallin and Hanson does not disclose or suggest that current location of the mobile station can be provided in response to comparing a time to a threshold time.

Further, Appellants respectfully submit that a person of skill in the art would not have been motivated to modify the teachings of Kallin such that the information regarding the last accessed cell is provided as a result of a comparing step (Kallin, Figure 11, block 234) in the paging process because this information is not required for the paging method. Additionally, there is no reason to provide location information in response to any of the threshold tests (531, 533, 535, 537) in Hanson either, for similar reasons.

Therefore, even if Kallin were considered to provide a current location of a mobile station, which is not admitted, a combination of Kallin and Hanson would not result in the claimed invention because the current location of a mobile station would not be provided in response to a step of comparing the time to a threshold time limit.

In contrast, according to embodiments of the claimed invention, a request for a current location of the MSC is received at the MSC 10. It is then determined a time at which the last known location was determined using data stored in the VLR 12. This time is compared to a threshold time limit in the MSC and, as a result of this comparison, if the time is within the threshold time limit, the last known location is provided as the current location. Examples of the present invention, therefore, provide the last known location of a mobile station as the current location depending on the “freshness” of the location information (see Specification, page 6, lines 22-27). As a result, the radio resources are optimized while the mobile station is in an idle mode unless location requests are issued to the mobile stations. Hanson and Kallin fail to disclose or suggest all of the elements of the claimed invention and, therefore, fail to provide such advantages.

Thus, for at least the reasons discussed above, the combination of Hanson and Kallin does not disclose or suggest “means for comparing the time to a threshold time limit; and means for providing, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit,” as recited in claim 42. As such, Appellants respectfully submit that the final rejection was clearly erroneous and should be reversed.

#### 15) Claim 43

Claim 43 is dependent upon claim 42, and recites additional limitations. Thus, claim 43 is patentable at least for the reasons claim 42 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

#### 16) Claim 44



Claim 44 is dependent upon claim 42, and recites additional limitations. Thus, claim 44 is patentable at least for the reasons claim 42 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

17) Claim 45

Claim 45 is dependent upon claim 42, and recites additional limitations. Thus, claim 45 is patentable at least for the reasons claim 42 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

18) Claim 46

Claim 46 is dependent upon claim 42, and recites additional limitations. Thus, claim 46 is patentable at least for the reasons claim 42 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

19) Claim 47

Claim 47 is dependent upon claim 42, and recites additional limitations. Thus, claim 47 is patentable at least for the reasons claim 42 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

20) Claim 48

Claim 48 is dependent upon claim 42, and recites additional limitations. Thus, claim 48 is patentable at least for the reasons claim 42 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this

rejection be reversed and this claim allowed.

21) Claim 49

Claim 49 is dependent upon claim 42, and recites additional limitations. Thus, claim 49 is patentable at least for the reasons claim 42 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

22) Claim 50

Claim 50 is dependent upon claim 42, and recites additional limitations. Thus, claim 50 is patentable at least for the reasons claim 42 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

23) Claim 51

Claim 51 is dependent upon claim 42, and recites additional limitations. Thus, claim 51 is patentable at least for the reasons claim 42 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

24) Claim 52

Claim 52 is dependent upon claim 42, and recites additional limitations. Thus, claim 52 is patentable at least for the reasons claim 42 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

25) Claim 53

Claim 53, upon which claims 54-56 are dependent, recites a mobile

communication system including an application configured to provide location dependent services and to generate a location request for a user equipment, a network element configured to receive the request for a current location of a mobile station, a network element configured to determine a time at which a last known location of the mobile station was determined and to compare the time to a threshold time limit, and a network element configured to provide, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit.

Appellants respectfully submit that claim 53 recites subject matter which is neither disclosed nor suggested by the combination of Hanson and Kallin.

Hanson discloses a system for paging mobile telephone units (MTU) in a cellular mobile system that conserves paging resources. If the identity of the most recent cell in which the MTU was located matches the identity of the cell wherein the MTU was located on the previous registration, then an initial page covering only the cell of the most recent call location for the target MTU, and the neighboring cells for that cell, is used.

Kallin discloses a method for adaptively selecting a paging area throughout which a mobile terminal is paged. A record is maintained which indicates the position where the mobile terminal was located when last accessing the network. When a page is to broadcast to the mobile terminal, the record is accessed and the page is broadcast to selected parts of the network based on the record.

As outlined above, the framework for the objective analysis for determining obviousness under 35 U.S.C. § 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual inquiries. The factual inquiries are: (a) determining the scope and content of the prior art;

(b) ascertaining the differences between the claimed invention and the prior art; and (c) resolving the level of ordinary skill in the pertinent art. (see *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, 82 USPQ2d 1385 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966); see also MPEP 2141).

In *KSR*, the Supreme Court particularly emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art” *Id.* However, as will be discussed below, Appellants submit that the prior art does not disclose, teach or suggest all of the elements of the claimed invention. Accordingly, Appellants respectfully assert that the final Office Action failed to establish a *prima facie* case for obviousness.

Appellants respectfully submit that the combination of Hanson and Kallin fails to disclose or suggest all of the elements of claim 53 and that, therefore, the final rejection was improper and should be withdrawn. In particular, Appellants submit that the combination of Hanson and Kallin does not disclose or suggest “a network element configured to determine a time at which a last known location of the mobile station was determined and to compare the time to a threshold time limit; and a network element configured to provide, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit,” as recited in claim 53.

Hanson is only directed to determining the size of a paging area. According to Hanson, if the current time minus the most recent registration time is greater than a fourth threshold time value, then flood paging of all MSCs is carried out. If the current time minus the most recent registration time is greater than the third threshold time value then the page is directed to the MSC. If the current time minus the most recent registration

time is greater than the second threshold time value, then either the sub-MSC registration zone is paged or the page is directed to the MSC. Finally, if the current time minus the most recent registration time is greater than the first threshold time value then only the new registration cell and its neighbor are paged (Hanson, Figure 5).

Therefore, Hanson is concerned with determining an area that should be paged. According to Hanson, if a paging is unsuccessful, then paging over a larger area is carried out. Consequently, the different thresholds of Hanson are used simply to define the size of an area over which a page is to be sent. Hanson fails to disclose or suggest that the last known location is provided as the current location if the time is within the threshold time limit. Kallin fails to cure these deficiencies in Hanson. As such, the combination of Hanson and Kallin fails to disclose or suggest all of the elements of the present claims.

Furthermore, Appellants respectfully submit that it would not have been obvious to a person of skill in the art to combine Hanson with Kallin to yield the claimed invention. Kallin, as discussed above, teaches that information indicative of the position at which the mobile terminal was located when it last accessed a base station of the network infrastructure of the communication system is maintained in a record (Kallin, Column 4, lines 13-16). In addition, Figure 11 of Kallin illustrates the steps for paging a mobile terminal. It is clear when reading the teachings of Kallin as a whole, that Kallin does not “provide” a current location of a mobile station as in the claimed invention. Rather, Kallin merely maintains a record of information indicative of the position when the mobile station last accessed a base station. Kallin is silent regarding the provision of location information.

Thus, the disclosure of Kallin with respect to location information is analogous to that of Hanson as shown in step 503 of Figure 5 (i.e. to find the identification of the cell in which the MTU was most recently found) (Kallin, Column 3, lines 65-67). Indeed, Kallin seeks to achieve a similar solution to that of Hanson (see Kallin, Column 7, lines 55-57). Kallin uses information regarding the last accessed cell by the mobile terminal and if no response is received to the page, then the paging area is increased.

Therefore, Appellants submit that a person of skill in the art would only be motivated to apply the teachings of Kallin regarding maintaining a record of the last accessed cell to the analogous portions of Hanson (i.e. block 503 of Figure 5). As mentioned above, Kallin merely teaches maintaining a record of the cell in which the mobile terminal was located when last accessing a base station. Kallin neither teaches nor suggests providing any more information regarding the mobile terminal than does Hanson.

In any case, Appellants respectfully submit that the record of location information in Kallin is only used at the start of the paging process (Kallin, Figure 11, block 232) before any steps of comparing (Figure 11, block 234) are used to determine whether the size of the paging area should be expanded.

Therefore, any combination of Kallin and Hanson would not result in the features of the claimed invention. Hanson teaches that the step of consulting the subscriber database record 502 occurs before the steps of paging 521, 517 and comparing the time to a threshold time 532, 533, 535, 537. As a result, the combination of Kallin and Hanson would not result in current location information being provided because both references disclose using information regarding the last access cell before any steps of comparing.

Thus, the combination of Kallin and Hanson does not disclose or suggest that current location of the mobile station can be provided in response to comparing a time to a threshold time.

Further, Appellants respectfully submit that a person of skill in the art would not have been motivated to modify the teachings of Kallin such that the information regarding the last accessed cell is provided as a result of a comparing step (Kallin, Figure 11, block 234) in the paging process because this information is not required for the paging method. Additionally, there is no reason to provide location information in response to any of the threshold tests (531, 533, 535, 537) in Hanson either, for similar reasons.

Therefore, even if Kallin were considered to provide a current location of a mobile station, which is not admitted, a combination of Kallin and Hanson would not result in the claimed invention because the current location of a mobile station would not be provided in response to a step of comparing the time to a threshold time limit.

In contrast, according to embodiments of the claimed invention, a request for a current location of the MSC is received at the MSC 10. It is then determined a time at which the last known location was determined using data stored in the VLR 12. This time is compared to a threshold time limit in the MSC and, as a result of this comparison, if the time is within the threshold time limit, the last known location is provided as the current location. Examples of the present invention, therefore, provide the last known location of a mobile station as the current location depending on the “freshness” of the location information (see Specification, page 6, lines 22-27). As a result, the radio resources are optimized while the mobile station is in an idle mode unless location requests are issued to the mobile stations. Hanson and Kallin fail to disclose or suggest all of the elements

of the claimed invention and, therefore, fail to provide such advantages.

Thus, for at least the reasons discussed above, the combination of Hanson and Kallin does not disclose or suggest “a network element configured to determine a time at which a last known location of the mobile station was determined and to compare the time to a threshold time limit; and a network element configured to provide, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit,” as recited in claim 53. As such, Appellants respectfully submit that the final rejection was clearly erroneous and should be reversed.

26) Claim 54

Claim 54 is dependent upon claim 53, and recites additional limitations. Thus, claim 54 is patentable at least for the reasons claim 53 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

27) Claim 55

Claim 55 is dependent upon claim 53, and recites additional limitations. Thus, claim 55 is patentable at least for the reasons claim 53 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

28) Claim 56

Claim 56 is dependent upon claim 53, and recites additional limitations. Thus, claim 56 is patentable at least for the reasons claim 53 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.



## 29) Claim 57

Claim 57, upon which claims 58-67 are dependent, recites a network element including a receiving unit configured to receive a request for a current location of a mobile station in a mobile communication system, a determining unit configured to determine a time at which a last known location of the mobile station was determined, a comparing unit configured to compare the time to a threshold time limit, and a providing unit configured to provide, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit.

Appellants respectfully submit that claim 57 recites subject matter which is neither disclosed nor suggested by the combination of Hanson and Kallin.

Hanson discloses a system for paging mobile telephone units (MTU) in a cellular mobile system that conserves paging resources. If the identity of the most recent cell in which the MTU was located matches the identity of the cell wherein the MTU was located on the previous registration, then an initial page covering only the cell of the most recent call location for the target MTU, and the neighboring cells for that cell, is used.

Kallin discloses a method for adaptively selecting a paging area throughout which a mobile terminal is paged. A record is maintained which indicates the position where the mobile terminal was located when last accessing the network. When a page is to broadcast to the mobile terminal, the record is accessed and the page is broadcast to selected parts of the network based on the record.

As outlined above, the framework for the objective analysis for determining obviousness under 35 U.S.C. § 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). Obviousness is a question of law based on underlying factual

inquiries. The factual inquiries are: (a) determining the scope and content of the prior art; (b) ascertaining the differences between the claimed invention and the prior art; and (c) resolving the level of ordinary skill in the pertinent art. (see *KSR International Co. v. Teleflex Inc.*, 550 U.S. \_\_\_, 82 USPQ2d 1385 (2007); *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966); see also MPEP 2141).

In *KSR*, the Supreme Court particularly emphasized “the need for caution in granting a patent based on the combination of elements found in the prior art” *Id.* However, as will be discussed below, Appellants submit that the prior art does not disclose, teach or suggest all of the elements of the claimed invention. Accordingly, Appellants respectfully assert that the final Office Action failed to establish a *prima facie* case for obviousness.

Appellants respectfully submit that the combination of Hanson and Kallin fails to disclose or suggest all of the elements of claim 57 and that, therefore, the final rejection was improper and should be withdrawn. In particular, Appellants submit that the combination of Hanson and Kallin does not disclose or suggest “a comparing unit configured to compare the time to a threshold time limit; and a providing unit configured to provide, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit,” as recited in claim 57.

Hanson is only directed to determining the size of a paging area. According to Hanson, if the current time minus the most recent registration time is greater than a fourth threshold time value, then flood paging of all MSCs is carried out. If the current time minus the most recent registration time is greater than the third threshold time value then the page is directed to the MSC. If the current time minus the most recent registration

time is greater than the second threshold time value, then either the sub-MSC registration zone is paged or the page is directed to the MSC. Finally, if the current time minus the most recent registration time is greater than the first threshold time value then only the new registration cell and its neighbor are paged (Hanson, Figure 5).

Therefore, Hanson is concerned with determining an area that should be paged. According to Hanson, if a paging is unsuccessful, then paging over a larger area is carried out. Consequently, the different thresholds of Hanson are used simply to define the size of an area over which a page is to be sent. Hanson fails to disclose or suggest that the last known location is provided as the current location if the time is within the threshold time limit. Kallin fails to cure these deficiencies in Hanson. As such, the combination of Hanson and Kallin fails to disclose or suggest all of the elements of the present claims.

Furthermore, Appellants respectfully submit that it would not have been obvious to a person of skill in the art to combine Hanson with Kallin to yield the claimed invention. Kallin, as discussed above, teaches that information indicative of the position at which the mobile terminal was located when it last accessed a base station of the network infrastructure of the communication system is maintained in a record (Kallin, Column 4, lines 13-16). In addition, Figure 11 of Kallin illustrates the steps for paging a mobile terminal. It is clear when reading the teachings of Kallin as a whole, that Kallin does not “provide” a current location of a mobile station as in the claimed invention. Rather, Kallin merely maintains a record of information indicative of the position when the mobile station last accessed a base station. Kallin is silent regarding the provision of location information.

Thus, the disclosure of Kallin with respect to location information is analogous to that of Hanson as shown in step 503 of Figure 5 (i.e. to find the identification of the cell in which the MTU was most recently found) (Kallin, Column 3, lines 65-67). Indeed, Kallin seeks to achieve a similar solution to that of Hanson (see Kallin, Column 7, lines 55-57). Kallin uses information regarding the last accessed cell by the mobile terminal and if no response is received to the page, then the paging area is increased.

Therefore, Appellants submit that a person of skill in the art would only be motivated to apply the teachings of Kallin regarding maintaining a record of the last accessed cell to the analogous portions of Hanson (i.e. block 503 of Figure 5). As mentioned above, Kallin merely teaches maintaining a record of the cell in which the mobile terminal was located when last accessing a base station. Kallin neither teaches nor suggests providing any more information regarding the mobile terminal than does Hanson.

In any case, Appellants respectfully submit that the record of location information in Kallin is only used at the start of the paging process (Kallin, Figure 11, block 232) before any steps of comparing (Figure 11, block 234) are used to determine whether the size of the paging area should be expanded.

Therefore, any combination of Kallin and Hanson would not result in the features of the claimed invention. Hanson teaches that the step of consulting the subscriber database record 502 occurs before the steps of paging 521, 517 and comparing the time to a threshold time 532, 533, 535, 537. As a result, the combination of Kallin and Hanson would not result in current location information being provided because both references disclose using information regarding the last access cell before any steps of comparing.

Thus, the combination of Kallin and Hanson does not disclose or suggest that current location of the mobile station can be provided in response to comparing a time to a threshold time.

Further, Appellants respectfully submit that a person of skill in the art would not have been motivated to modify the teachings of Kallin such that the information regarding the last accessed cell is provided as a result of a comparing step (Kallin, Figure 11, block 234) in the paging process because this information is not required for the paging method. Additionally, there is no reason to provide location information in response to any of the threshold tests (531, 533, 535, 537) in Hanson either, for similar reasons.

Therefore, even if Kallin were considered to provide a current location of a mobile station, which is not admitted, a combination of Kallin and Hanson would not result in the claimed invention because the current location of a mobile station would not be provided in response to a step of comparing the time to a threshold time limit.

In contrast, according to embodiments of the claimed invention, a request for a current location of the MSC is received at the MSC 10. It is then determined a time at which the last known location was determined using data stored in the VLR 12. This time is compared to a threshold time limit in the MSC and, as a result of this comparison, if the time is within the threshold time limit, the last known location is provided as the current location. Examples of the present invention, therefore, provide the last known location of a mobile station as the current location depending on the “freshness” of the location information (see Specification, page 6, lines 22-27). As a result, the radio resources are optimized while the mobile station is in an idle mode unless location requests are issued to the mobile stations. Hanson and Kallin fail to disclose or suggest all of the elements

of the claimed invention and, therefore, fail to provide such advantages.

Thus, for at least the reasons discussed above, the combination of Hanson and Kallin does not disclose or suggest “a comparing unit configured to compare the time to a threshold time limit; and a providing unit configured to provide, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit,” as recited in claim 57. As such, Appellants respectfully submit that the final rejection was clearly erroneous and should be reversed.

30) Claim 58

Claim 58 is dependent upon claim 57, and recites additional limitations. Thus, claim 58 is patentable at least for the reasons claim 57 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

31) Claim 59

Claim 59 is dependent upon claim 57, and recites additional limitations. Thus, claim 59 is patentable at least for the reasons claim 57 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

32) Claim 60

Claim 60 is dependent upon claim 57, and recites additional limitations. Thus, claim 60 is patentable at least for the reasons claim 57 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

33) Claim 61

Claim 61 is dependent upon claim 57, and recites additional limitations. Thus, claim 61 is patentable at least for the reasons claim 57 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

34) Claim 62

Claim 62 is dependent upon claim 57, and recites additional limitations. Thus, claim 62 is patentable at least for the reasons claim 57 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

35) Claim 63

Claim 63 is dependent upon claim 57, and recites additional limitations. Thus, claim 63 is patentable at least for the reasons claim 57 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

36) Claim 64

Claim 64 is dependent upon claim 57, and recites additional limitations. Thus, claim 64 is patentable at least for the reasons claim 57 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

37) Claim 65

Claim 65 is dependent upon claim 57, and recites additional limitations. Thus, claim 65 is patentable at least for the reasons claim 57 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this

rejection be reversed and this claim allowed.

38) Claim 66

Claim 66 is dependent upon claim 57, and recites additional limitations. Thus, claim 66 is patentable at least for the reasons claim 57 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

39) Claim 67

Claim 67 is dependent upon claim 57, and recites additional limitations. Thus, claim 67 is patentable at least for the reasons claim 57 is patentable, and further, because it recites additional limitations. Accordingly, it is respectfully requested that this rejection be reversed and this claim allowed.

In view of the above, Appellants respectfully submit that the final Office Action failed to establish a prima facie case for obviousness for the various reasons discussed above. Furthermore, for all of the above noted reasons, it is strongly contended that certain clear differences exist between the present invention as claimed in claims 29-67 and the prior art relied upon by the Examiner. It is further contended that these differences are more than sufficient that the present invention would not have been obvious to a person having ordinary skill in the art at the time the invention was made.

This final rejection being in error, therefore, it is respectfully requested that this honorable Board of Patent Appeals and Interferences reverse the Examiner's decision in this case and indicate the allowability of application claims 29-67.

In the event that this paper is not being timely filed, the applicant respectfully



petitions for an appropriate extension of time. Any fees for such an extension together with any additional fees which may be due with respect to this paper may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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Encls: Appendix 1 - Claims on Appeal  
Appendix 2 - Evidence  
Appendix 3 - Related Proceedings

## APPENDIX 1

### CLAIMS ON APPEAL

Claims 1-28 (Cancelled).

29. (Previously Presented) A method comprising:

receiving a request for a current location of a mobile station in a mobile communication system;

determining a time at which a last known location of the mobile station was determined;

comparing the time to a threshold time limit; and

in response to the comparing, providing, as the current location, the last known location if the time is within the threshold time limit.

30. (Previously Presented) A method according to claim 29 further comprising:

determining a current location of the mobile station if the time is not within the threshold limit; and

providing, as the current location, the obtained current location.

31. (Previously Presented) A method according to claim 29 wherein the

comparing the time to the threshold time limit is dependent upon the status of the mobile station.

32. (Previously Presented) A method according to claim 31 wherein if the mobile station is active the comparing is disabled and a current location is determined for the mobile station.

33. (Previously Presented) A method according to claim 31 wherein if the status

of the mobile station is idle, the comparing is enabled.

34. (Previously Presented) A method according to claim 30, wherein if a current location is not provided, the last known location is provided as the current location.

35. (Previously Presented) A method according to claim 29 further comprising storing the last known location of a mobile station together with a time associated with the last known location.

36. (Previously Presented) A method according to claim 29 further comprising storing the threshold time limit.

37. (Previously Presented) A method according to claim 29 further comprising dynamically adjusting the threshold time limit.

38. (Previously Presented) A method according to claim 29 wherein the threshold time limit is set by a network operator.

39. (Previously Presented) A method according to claim 29 wherein the threshold limit is included in the request for the current location.

40. (Previously Presented) A method according to claim 29 wherein the time is an elapsed time.

41. (Previously Presented) A method comprising:  
receiving at a network element a request from an application for a current location of a mobile station in a mobile communication system;  
determining, at the network element, a time at which a last known location of the mobile station was determined;  
comparing, at the network element, the time to a threshold time limit; and  
in response to the comparing, providing to the application, as the current location,

the last known location if the time is within the threshold time limit.

42. (Previously Presented) A network element comprising:

means for receiving a request for a current location of a mobile station in a mobile communication system;

means for determining a time at which a last known location of the mobile station was determined;

means for comparing the time to a threshold time limit; and

means for providing, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit.

43. (Previously Presented) A network element according to claim 42 further comprising means for determining a current location for the mobile station if the time is not within the threshold limit; wherein the means for providing is adapted to provide, as the current location, the obtained current location.

44. (Previously Presented) A network element according to claim 42 wherein the means for comparing the time to the threshold time limit is responsive to a signal indicating the status of the mobile station.

45. (Previously Presented) A network element according to claim 44 responsive to said signal indicating that the mobile station is active the comparing means is disabled and a current location is determined for the mobile station.

46. (Previously Presented) A network element according to claim 44 wherein responsive to said signal indicating that the mobile station is idle, the comparing means is enabled.

47. (Previously Presented) A network element according to claim 43, wherein if a

current location is not provided, the network element is adapted to provide the last known location is provided as the current location.

48. (Previously Presented) A network element according to claim 42 further comprising means for storing the last known location of a mobile station together with a time associated with the last known location.

49. (Previously Presented) A network element according to claim 42 further comprising means for storing the threshold time limit.

50. (Previously Presented) A network element according to claim 42 further comprising means for dynamically adjusting the threshold time limit.

51. (Previously Presented) A network element according to claim 42 wherein the threshold time limit is set by a network operator.

52. (Previously Presented) A network element according to claim 42 wherein the threshold time limit is included in the request for a current location.

53. (Previously Presented) A mobile communication system comprising:  
an application configured to provide location dependent services and to generate a location request for a user equipment;

a network element configured to receive the request for a current location of a mobile station;

a network element configured to determine a time at which a last known location of the mobile station was determined and to compare the time to a threshold time limit;  
and

a network element configured to provide, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit.

54. (Previously Presented) A mobile communication system according to claim 53, wherein the network element for determining the time at which the last known location was determined includes a visitor location register.

55. (Previously Presented) A mobile communication system according to claim 53 wherein the system implements a customized applications for mobile network enhanced logic (CAMEL) framework.

56. (Previously Presented) A mobile communication system according to claim 53 wherein the system implements location services.

57. (Previously Presented) A network element comprising:

- a receiving unit configured to receive a request for a current location of a mobile station in a mobile communication system;
- a determining unit configured to determine a time at which a last known location of the mobile station was determined;
- a comparing unit configured to compare the time to a threshold time limit; and
- a providing unit configured to provide, as the current location, in response to the comparing, the last known location if the time is within the threshold time limit.

58. (Previously Presented) A network element according to claim 57 further comprising a determining unit configured to determine a current location for the mobile station if the time is not within the threshold limit; wherein the providing unit is configured to provide, as the current location, the obtained current location.

59. (Previously Presented) A network element according to claim 57 wherein the comparing unit is responsive to a signal indicating the status of the mobile station.

60. (Previously Presented) A network element according to claim 59 responsive to

said signal indicating that the mobile station is active the comparing unit is disabled and a current location is determined for the mobile station.

61. (Previously Presented) A network element according to claim 59 wherein responsive to said signal indicating that the mobile station is idle, the comparing unit is enabled.

62. (Previously Presented) A network element according to claim 58, wherein if a current location is not provided, the network element is configured to provide the last known location as the current location.

63. (Previously Presented) A network element according to claim 57 further comprising a storing unit configured to store the last known location of a mobile station together with a time associated with the last known location.

64. (Previously Presented) A network element according to claim 57 further comprising a storing unit configured to store the threshold time limit.

65. (Previously Presented) A network element according to claim 57 further comprising an adjusting unit configured to dynamically adjust the threshold time limit.

66. (Previously Presented) A network element according to claim 57 wherein the threshold time limit is set by a network operator.

67. (Previously Presented) A network element according to claim 57 wherein the threshold time limit is included in the request for a current location.

## APPENDIX 2

### **EVIDENCE APPENDIX**

No evidence under section 37 C.F.R. 1.130, 1.131, or 1.132 has been entered or will be relied upon by Appellants in this appeal.



## APPENDIX 3

### RELATED PROCEEDINGS APPENDIX

No decisions of the Board or of any court have been identified under 37 C.F.R.

§41.37(c)(1)(ii).